HERPES ZOSTER

Infection Control Guidelines for Long-Term Care Facilities

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Shingles, also known as herpes zoster, results from the reactivation of the varicella-zoster virus (VZV) along peripheral nerves and the skin they innervate from virus acquired during chickenpox, the primary infection with VZV, that has become latent in the dorsal nerve root ganglia. Shingles is a red, painful, pruritic (itchy) and blistery rash typically in a line along one side of the body, often preceded by pain or other discomfort in the same area. There are usually no fever or other systemic symptoms. Pain and itching in the area of the shingles can persist after the lesions have resolved (post-herpetic neuralgia). Shingles can be treated with several antiviral agents. Shingles can occasionally become serious in immunocompromised persons, with generalized skin eruptions and central nervous system, pulmonary, hepatic, and pancreatic involvement.

Shingles is found worldwide and has no seasonal variation. The most striking feature of the epidemiology of shingles is the increase in incidence found with increasing age. Decreasing cell-mediated immunity (CMI) associated with aging is thought to be responsible for these increased rates. Similarly, the loss of CMI among persons with malignancies and HIV infection is thought to be responsible for higher rates of shingles among those populations. Approximately 15 percent of the general population will experience shingles during their lifetime. An estimated 300,000 episodes of shingles occur annually. Ninety-five percent of these episodes are primary occurrences, and 5 percent are recurrences.

Infectious Agent: Varicella-zoster virus (VZV, chickenpox virus)

Reservoir: Humans

Mode of Transmission: VZV infection is transmitted to susceptible individuals (no history of chickenpox or varicella vaccine) by the following means:

1. From shingles cases:
   - direct contact with lesions

2. From disseminated shingles cases, or localized shingles cases in the immunocompromised:
   - airborne
   - direct contact with lesions

Exposure to shingles can result in chickenpox in a susceptible person but **cannot** cause shingles. Exposure to chickenpox does **not** cause shingles.

Incubation Period: Shingles has no incubation period; it is caused by reactivation of latent infection from primary chickenpox disease. Shingles is infectious until all lesions have crusted over. Infectiousness can be prolonged in immunocompromised patients.

Diagnosis: Clinical diagnosis. Laboratory confirmation is not usually indicated. However, isolation of VZV, or a positive DFA, PCR, or Tzanck smear from a clinical specimen can be helpful.

Treatment: Analgesics and antiviral drugs can be used to treat shingles.

Control: All susceptible healthcare workers should ensure that they are immune to chickenpox. In healthcare institutions, serologic screening of personnel who have a negative or uncertain history of chickenpox before vaccinating is likely to be reliable and cost-effective. Routine testing for chickenpox immunity after two doses of vaccine is not necessary because 99 percent of adults are seropositive after the second dose. Seroconversion, however, does not always result in full protection against disease. For vaccinated healthcare workers who are subsequently exposed to shingles (or chickenpox), the following measures should be considered:

- **Test** for serologic immunity immediately after chickenpox exposure (the latex agglutination [LA] test is fast).
- **Retest** 5-6 days later to determine if an anamnestic response (boosting of antibody titres) is present.
- **Exclude or reassign** personnel who do not have detectable antibody on the first or second test.

1. **Prevent exposure to the case**, as follows:
   Staff
   - **Staff with localized shingles** should cover lesions and should not care for high-risk patients until their skin lesions have become dry and crusted.
   - **Staff with disseminated shingles and immunocompromised staff with shingles** should be excluded for the duration of their illness.

   Patients
   - **Patients with localized shingles** should be cared for using standard precautions until all lesions are crusted:
     - Only immune staff should care for these patients.
     - Current or prospective roommates should be immune.
     - Gloves should be worn when touching infectious material and during direct patient care. Clean gloves should be used before touching mucous membranes and nonintact skin. Gloves should be changed between tasks and procedures on the same patient after contact with material that may contain a high concentration of virus. Gloves should be promptly removed after use and before touching noncontaminated items and environmental surfaces.
     - Handwashing is necessary after touching the patient **and before** contact with another patient or with noncontaminated items and environmental surfaces, whether or not gloves were used.
     - Masks, gowns, and eye protection should be worn during procedures and patient care activities likely to generate splashes of blood, bodily fluids, secretions, or excretions.
     - Used patient care equipment and used linen should be handled in a manner that prevents skin and mucous membrane exposure and contamination of clothing.

- **Patients with disseminated shingles and immunocompromised patients with shingles** (either localized or disseminated) require standard, airborne, and contact precautions. In addition to the standard precautions listed above, the following precautions must also be followed:
  - The room should have negative air-pressure ventilation. However, if this is not available, using a private room is acceptable. If a private room is unavailable, make sure roommates are immune and all visitors are screened for history of chickenpox or varicella vaccine.
  - Gloves and gowns should be worn at all times.
  - Susceptible staff or visitors should not enter patient room. If unavoidable, masks should be worn. Persons immune to varicella need not wear masks.

2. **Identify all exposed individuals.**
   - "Exposure" to uncomplicated shingles is defined as: contact with lesions; for example, through close patient care, touching, or hugging.
   - "Exposure" to disseminated shingles and localized or disseminated shingles in an immunocompromised person is defined as: 1) contact with lesions (for example, through close patient care, touching, or hugging); or 2) sharing indoor airspace with the infectious person (for example, occupying the same room).

3. **Identify high-risk susceptible patients/staff among the exposed.** Susceptible individuals are those without a reliable history of chickenpox or shingles, documentation of prior vaccination against chickenpox, or serologic proof of immunity. High-risk susceptibles include those who are immunosuppressed due to underlying medical conditions (including HIV infection), treatment or medications (including steroids), or who are susceptible pregnant women. They are at greater risk for complications from varicella and should be referred promptly to their health care provider. These high-risk susceptibles should receive VZIG (varicella zoster immune globulin) as soon as possible within 96 hours of exposure. Please note, bone marrow transplant recipients should be considered susceptible *regardless* of past history of disease,

4. **Identify and vaccinate other exposed susceptibles.** Susceptible individuals are those without a reliable history of chickenpox or shingles, documentation of prior vaccination against chickenpox, or serologic proof of immunity. If the varicella vaccine is given within 3 (and possibly up to 5) days of exposure to VZV, it can prevent disease. If 5 days have passed since exposure to the case, the vaccine should still be given, as it will protect against possible future exposures. Chickenpox can still occur in spite of vaccination, but vaccinating someone who is incubating chickenpox or who is immune is not harmful. See attachment A for information about groups who should **not** receive varicella vaccine.

5. **Discharge or isolate exposed susceptible patients.** Isolate on airborne precautions all exposed, susceptible patients who cannot be discharged from before day 8 after exposure, from day 8 through day 21 after exposure. Those who have received VZIG must remain in isolation until day 28.

6. **Consider excluding exposed susceptible healthcare staff.** Decisions about excluding exposed susceptible staff will depend on factors such as degree of patient contact and whether or not the staff person received vaccine within 3 days of exposure. The recommendation to use vaccine as

a post-exposure prophylaxis is recent (1999), and there is limited experience with its use in high-risk settings. The MDPH's routine recommendation is to exclude all exposed susceptible staff from direct patient contact and possibly from the entire workplace from day 8 to day 21 after exposure. Exclusion of VZIG recipients should be extended to 28 days after exposure.

7. **Consider testing exposed immunized staff.** After receiving 2 doses of varicella vaccine, 99% of adults are seropositive. However, since seroconversion does not always result in complete protection against disease, testing vaccine recipients for seropositivity immediately after exposure and retesting 5 to 6 days later for an anamnestic response is a potentially effective strategy for identifying those who remain at risk for varicella. If antibodies are present immediately after exposure or antibodies appear at 5-6 days (too early for antibodies caused by infection at exposure and assumed to be due to vaccine triggering a memory response), then the vaccine recipient was immune at the time of exposure.

8. **Conduct surveillance for chickenpox for 21 days (one incubation period) after the last exposure to shingles**. For those who received VZIG and where immunocompromised individuals are involved, surveillance should continue for 28 days.

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